DUS DEAS 796

DRAFT UGANDA STANDARD

First Edition
2016-mm-dd

Palm stearin — Specification

Reference number
DUS DEAS 796: 2016

Compliance with this standard does not, of itself confer immunity from legal obligations

A Uganda Standard does not purport to include all necessary provisions of a contract. Users are responsible for its correct application

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National foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to co-ordinate the elaboration of standards and is

(a) a member of International Organisation for Standardisation (ISO) and

(b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and

(c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

This Draft Uganda Standard, DUS DEAS 796: 2016*, Palm stearin — Specification,* is identical with and has been reproduced from a Draft East African Standard, DEAS 796: 2016*, Palm stearin — Specification,* and is being proposed for adoption as a Uganda Standard.

This standard was developed by the Food and agriculture Standards Technical Committee (UNBS/TC 2).

Wherever the words, “East African Standard" appear, they should be replaced by "Uganda Standard."

DEAS 796:2016

ICS 67.200.10

DRAFT EAST AFRICAN STANDARD

Palm stearin — Specification

EAST AFRICAN COMMUNITY

First Edition 2016

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Community established an East African Standards Committee mandated to develop and issue East African Standards.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

FDEAS 796 was prepared by Technical Committee EASC/ TC/015, *Oil Seeds, Edible Fats and Oils*.

Palm stearin — Specification

1 Scope

This Final Draft East Africa Standard specifies the requirements and methods of sampling and test for crude and processed palm stearin derived from fleshy mesocarp of the fruit of the oil palm (*Elaeis guineensis*).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies

EAS 38, *Labelling of pre-packaged foods — Specification*

EAS 39, *Code of practice for hygiene for food and drink industries*

ISO 660, *Animal and vegetable fats and oils — Determination of acid value and acidity*

ISO 662, *Animal and vegetable fats and oils — Determination of moisture and volatile matter content*

ISO 663, *Animal and vegetable fats and oils — Determination of insoluble impurities content*

ISO 2590, *General method for determining of arsenic — Diethyldithiocarbamate photometric method*

ISO 3596, *Animal and vegetable fats and oils — Determination of unsaponifiable matter — Method using diethyl ether*

ISO 3657, *Animal and vegetable fats and oils — Determination of saponification value*

ISO 3960, *Animal and vegetable fats and oils — Determination of peroxide value — Iodometric (visual) endpoint determination*

ISO 3961, *Animal and vegetable fats and oils — Determination of iodine value*

ISO 5508, *Animal and vegetable fats and oils — Analysis by gas chromatography of methyl esters of fatty acids*

ISO 5555, *Animal and vegetable fats and oils — Sampling*

ISO 6320, *Animal and vegetable fats and oils — Determination of refractive index*

ISO 6321, *Animal and vegetable fats and oils — Determination of melting point in open capillary tubes (Slip point)*

ISO 8294, *Animal and vegetable fats and oils — Determination of copper, iron and nickel contents — Graphite furnace atomic absorption method*

ISO 12193, *Animal and vegetable fats and oils — Determination of lead by direct graphite furnace atomic absorption spectroscopy*

ISO 15305, *Animal and vegetable fats and oils — Determination of Lovibond colour*

3 Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply.

3.1
crude palm stearin
solid fraction, derived from fractionation of crude palm oil, meant for further processing

3.2
neutralized palm stearin
is the solid fraction, obtained by fractionation of neutralized palm oil or crude palm oil which has been neutralized with alkali meant for further processing and not for human consumption

3.3
neutralized bleached palm stearin
solid fraction obtained by fractionation either from crude palm oil and subsequently neutralized with alkali and bleached with bleaching earth or from neutralized palm oil and subsequently bleached with bleaching earth

3.4
refined, bleached and deodorized palm stearin (refined)
solid fraction obtained by fractionation either from refined, bleached and deodorized palm oil, or from crude or semi-refined palm oil, subsequently refined by neutralization with alkali, bleached with bleaching earth or activated carbon or both and deodorized with steam or alternatively bleached, deacidified and deodorized by physical means

3.5
bleached palm stearin
solid fraction from palm oil which has been treated with food grade bleaching agents for the purpose of removing colouring pigments and impurities

3.6
food grade packaging material
packaging material, made of substances which are safe and suitable for the intended use and which will not impart any toxic substance or undesirable odour or flavour to the product

4 Quality and compositional requirements

4.1 General requirements

4.1.1 Palm stearin shall be free from

a) adulterants, sediments, suspended or foreign matter, separated water and added colouring or flavouring substances, and

b) foreign and rancid odour and taste.

4.1.2 Palm stearin shall comply with the general compositional requirements specified in Table 1.

Table 1 — General compositional requirements for palm stearin

S. No.	Characteristics	Requirements	Method of test
i)	Relative density 60 °C/water at 20 °C	0.881 – 0.891	Annex A
ii)	Refractive index, ND 60 °C	1.447 – 1.452	ISO 6320
iii)	Saponification value, mg KOH/g oil	193 – 205	ISO 3657
iv)	Unsaponifiable matter, g/kg	≤ 9[1]	ISO 3596
v)	Fatty acid composition (wt % as methyl esters)	As in Annex C	ISO 5508
vi)	Iodine value (Wijs), max.	48	ISO 3961
vii)	Slip point (°C), min.	44	ISO 6321
viii)	Iron, mg/kg	1.5	ISO 8294
ix)	Copper, mg/kg	0.1	
[1] Unsaponifiable matter shall be less than or equal to 9			

4.2 Specific compositional requirements

Palm stearin shall comply with requirements specified in Table 2.

Table 2 — Specific compositional requirements for palm stearin

S. No	Parameter	Product requirements					Method of test
		Crude	Neutralized	Neutralized bleached palm stearin	Bleached	Refined stearin	
i)	Free fatty acid (as palmitic), %	≥ 2.5[1]	0.3< 2.5[2]	0.3< 2.5[2]	≥ 2.5[1]	≤ 0.3	ISO 660
ii)	Moisture and volatile matter, % max	0. 5	0.5	0.5	0.5	0.15	ISO 662
iv)	Peroxide value, mEq/kg, max.	NA	NA	NA	NA	10	ISO 3960
v)	Colour, 133.35 mm (5¼ in lovibond)	≥ 20 R[3]	≥ 20 R[3]	6 < 20 R[4]	6 < 20 R[4]	≤ 6 R	ISO 15305
[1]FFA shall be greater than or equal to 2.5 [2]FFA shall be greater than 0.3 but less than 2.5 [3]Colour shall be greater than or equal to 20R [4]Colour shall be greater than 6 but less than 20R							

5 Fortification

Edible refined palm stearin products may be fortified in accordance with EAS 769.

6 Food additives

Edible refined palm stearin may contain food additives in accordance with Codex Stan 192

7 Hygiene

Palm stearin shall be produced, processed, handled and stored in accordance with EAS 39.

8 Contaminants

8.1 Pesticide residues

Palm stearin shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

8.2 Other contaminants

Palm stearin shall comply with those maximum limits specified in Table 6.

Table 6 — Limits for contaminants in palm stearin

S. No	Contaminants	Maximum level	Test Method
i)	Nickel, mg/kg	0.1	ISO 8294
ii)	Lead, mg/kg	0.1	ISO 12193
iii)	Arsenic, mg/kg	0.1	ISO 2590

9 Packaging

Palm stearin shall be packaged in food grade containers and sealed in manner to ensure the safety and quality requirements specified in this standard are maintained throughout the shelf life of the product..

10 Labelling

In addition to the labelling requirements specified in EAS 38, the name of the product shall be ‘Palm stearin’ with the description as either

- ‘neutralised’,
- ‘bleached’,
- ‘bleached and neutralised’, or
- ‘refined’.

Where palm stearin has been subject to any process of esterification or to processing which alters its fatty acid composition or its consistency, the name of the product or any synonym shall not be used unless qualified to indicate the nature of the product.

11 Sampling

Sampling of palm stearin products for the purposes of testing shall be done in accordance with the method prescribed in ISO 5555

Annex A
(normative)

Determination of relative density *t*/20 °C

A.1 Principle

The relative density at *t*/20 °C of an oil or fat is the ratio of the mass in air of a given volume of the oil or at *t* °C to that of the same volume of water at 20 °C, the weighings being made with weights adjusted to balance weight in air.

A.2 Apparatus

Pycnometer.

A.3 Procedure

Calibrate a relative density bottle or pycnometer (of capacity of at least 25 mL) as follows:

Clean and dry the bottle and weigh it in a bath of water at 20 °C until it reaches that temperature. If a bottle is used, insert the stopper in such a way that the capillary, if complete filled with water, and then maintain it at 20 °C until no further alteration in volume occurs. Wipe the stopper. If a pycnometer is used, adjust the volume of liquid to the fixed mark. Remove the bottle or pycnometer from the bath, dry the outside, allow to stand for a short time and weigh.

Empty and dry the bottle or pycnometer. Fill it with the sample of oil or fat previously brought near to the temperature of *t* °C. Keep the bottle or pycnometer in a bath adjusted to *t* °C until it has acquired that temperature. If a bottle is used, insert the stopper in such a way that the capillary is completely filled with the oil or the fat and then maintain it at the temperature *t* °C until no further alteration in volume occurs. Wipe the stopper. If a psychomotor is used, adjust the volume to the fixed mark. Remove the apparatus from the bath, dry the outside, allow to stand for a short time and weigh. Make all weighing air with weights adjusted to balance brass weights in air.

1.4 Calculation and expression of results

$$\text{Relative density } t/20\,^{\circ}\text{C in air} = \frac{M_2}{M_1\,(1+\infty\ (t-20\,^{\circ}\text{C})}$$

where,

m_2 is the mass, in grams, of oil or fat obtained in the test;

m_1 is the mass, in grams, of water obtained in calibration test; and

∞ is the coefficient of cubic expansion of glass at the given temperature:

- For soda glass, ∞= 0.000 03.

- For borosilicate glass, ∞= 0.000 01

Annex C
(normative)

Free fatty acids composition (wt % as methyl esters)

Carbon Number	Range	Method of Test
C 12:0	0.05 – 0.5	ISO 5508
C 14:0	1. – 2	
C 16:0	48 – 74	
C 16:1	0.05 – 0.2	
C 18:0	3.9 – 6	
C 18:1	15.5 – 36.0	
C 18:2	3 – 10	
C 18:3	0.05 – 0.5	
C 20:0	0.05 – 1	